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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,582	05/09/2001	Jithamithra Sarathy	312/12	5064

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EXAMINER

NGUYEN, JOSEPH H

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 01/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/852,582

Applicant(s)

JITHAMITHRA SARATHY

Examiner

Joseph Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 14, 15 and 20-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 16-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-13, 16-19, drawn to a semiconductor device, classified in class 257, subclass 98 and wherein:
 - II. Claims 14-15, 20-28, drawn to a method of using a semiconductor device, classified in class 438, subclass +1.

The inventions are distinct each from the other because of the following reasons: Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case unpatentability of the Group I invention would not necessarily imply unpatentability of the Group II invention, since the product of the Group I invention could be used by another and materially different process from that of the Group II invention. For instance, as an alternative in claim 14, the device of claim 1 can be used for an optical memory.

2. Because these inventions are distinct for the reasons given above, the inventions have acquired a separate status in the art because of their recognized divergent subject matter as shown by their different classification, the search required for Group II is not required for Group I, and separate examination would be required, restriction for examination purposes as indicated is proper.

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3. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

During a telephone conversation with Aaron Haleva on 12/20/2001 a provisional election was made with traverse to prosecute the invention I, claims 1-13 and 16-19. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-15 and 20-28 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsui (JP Patent 363111679A).

Regarding claim 1, Matsui discloses on figure 3 a semiconductor device comprising "a buried grating [14]; a waveguide core [13], an absorption section [16] and a tuning section [18]".

Regarding claim 2, Matsui discloses on figure 3 "the device is integrated in a single optical circuit on a common substrate [11]".

Claims 5, 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitzutani et al.

Regarding claim 5, Nitta discloses on figure 6 a semiconductor device comprising “ a substrate [71] of a first doping type; an undoped region [72] laterally disposed above the substrate; a grating [81] positioned between the substrate and the undoped region; a waveguide [73, 74] laterally disposed above the undoped region; an upper region [76] of a second doping type laterally disposed above the waveguide region where the waveguide is of a different atomic composition than the substrate, undoped region and upper region”.

Regarding claim 9, Mitzutani et al discloses on figure 6 the waveguide 73,74 is composed of InGaAsP.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui in view of Aoki et al.

Regarding claims 3 and 4, Matsui discloses on figure 3 substantially all the structure set forth in the claimed invention except the device length equal or less than 500 um and the device width equal or less than 100 um. However, Aoki et al discloses on figure 1A a semiconductor device having the device length equal or less than 500

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um and the width equal or less than 100 um. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsui by having the device length equal or less than 500 um and the device width equal or less than 100 um for the purpose of simplifying the manufacturing method of a photodetector device.

Claims 5-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandrasekhar in view of Nitta et al.

Regarding claims 5-13, Chandrasekhar discloses on figure 2 substantially all the structure set forth in the claimed invention except "a grating positioned between the substrate and the undoped region". However, Nitta et al discloses on figure 4 a grating 201a positioned between the substrate 201 and the undoped region 202. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chandrasekhar by having a grating positioned between the substrate and the undoped region for the purpose of improving the light emission efficiency of a photodetector.

Claims 16- 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui or Matzutani et al in view of Rushing.

Regarding claims 16-19, Matsui or Matzutani discloses the photodetector as set forth in the claimed invention. It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the photodetector as disclosed by

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Matsui or Matzutani et al into the data network disclosed by Rushing on figure 3 for the purpose of improving the photo detection efficiency in an electrical circuit.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 5051790 to Hammer discloses the opt electronic interconnection.

US Patent 5760419 to Nabiev et al discloses a compact and cost effective wavelength meter and photodetector.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30am-4: 30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone number for the organization where this application or proceeding is assigned is (703)-308-7382 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956

JN
December 27, 2001


Jerome Jackson, Jr.
Primary Examiner